

LA-UR-21-23321

Approved for public release; distribution is unlimited.

Title: Classified Library Completes Large Digitization Project of Patent Collection

Author(s): Carr, Alan Brady

Intended for: Web

Issued: 2021-04-07

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

Title: Classified Library Completes Large Digitization
Project of Patent Collection

Author: Alan Carr

Classified library completes large digitization project of Patent Collection

Now more scientists can access earliest weapons records

By Alan B. Carr, Senior Historian, [National Security Research Center](#)

Many of us regularly enjoy the online resources provided by the National Security Research Center (NSRC), which is the Lab's classified library. However, you may not be aware of all the work that goes on behind the scenes to digitize articles, reports, photographs, and correspondence. This process not only preserves documents, many of which date back to the Manhattan Project era, but also ensures they are searchable and accessible for today's national security work.

You also may not be aware that a vast majority of the Laboratory's information holdings have not yet been digitized. And by vast majority, I mean perhaps 90% of the millions of holdings in the NSRC is only available in hard copy.

But recently, the NSRC team successfully completed the digitization of one of my favorite collections: the Patent Collection. These patents formally record the intellectual foundation of the Weapons Program, and they record the Laboratory's unsurpassed history of innovation.

The Patent Collection is made up of 25 patents, which is more than 5,300 mostly-classified paper documents from 1944 - 1946, including official forms, handwritten notes, and drawings. This collection shows Los Alamos has an unsurpassed – and legally-documented – history of technical innovation in the nuclear weapons field. When consulting the patents, today's researchers can see the technology evolve by reading the notes of the inventors.

Chris C'de Baca, Group Leader for Weapons Research Services - Secure Information Services, who manages the NSRC, said: "The Patent Collection is one of countless examples in the NSRC that is rare, historical, interesting, and contains information that is pertinent to the present and future mission of the Laboratory."

I completely agree.

Patents offer insight into early weapons development

It comes as a surprise to many that early nuclear weapons designs were patented (Feel free to insert your lawsuit joke here.), but they were. During the 1940s, this was a way for the U.S. government to try to control atomic energy ([read more from Historian Alex Wellerstein](#)).

Today, the NSRC owns many of the originals and this truly unique collection is regularly accessed by Lab researchers. For instance, questions pertaining to the development of thermonuclear weapons, commonly called hydrogen bombs or H-bombs, is still debated in the open literature and the original patent documentation helps offer insight into that important and fascinating history. Weapons Physics (ALDX) Chief Scientist Mark Chadwick said, "I think the process whereby we reconstruct the history of who gets credit for what is helped greatly by these patents."

As I've reviewed the patents, I've discovered that Manhattan Project era (1939 - 1946) scientists devised ideas for nuclear weapons that would not find their way into stockpiled designs until years later. It's also

interesting to ponder what the Los Alamos wartime atomic spy and physicist Klaus Fuchs may have passed along to the Soviet Union, considering he is named as an inventor on some of the patents.

Preservation through digitization

I asked Nanette Mayfield, who oversees the NSRC's digitizers, how the materials in the NSRC collections are chosen for digitization. "Before we begin digitizing a collection we take into account customer value, deterioration risk, collection size and digitization complexity," she said. Nanette further explains, "We then assign skilled archivist-digitizers who have demonstrated knowledge of equipment operation, archival standards, and digitization processes for the collection media type." In the case of the Patent Collection, the skilled digitizer was Lenny Martinez, who has worked as a LANL illustrator and also can croon like nobody's business.

Throughout the digitization process, Lenny worked closely with the NSRC's Lead Archivist Danny Alcazar. Partnering with an experienced archivist is essential to the process, considering the delicate and priceless nature of the patent documents.

As Danny informed me: "Technically, every time an image is exposed to bright light, a small amount of damage occurs. For this reason, it was critical to scan the documents with the highest attention to detail to both preserve the documents and to have enduring digital quality." And for those of you who have experienced the horrors of working with old microfiche scans, worry not: At the NSRC, quality is of paramount importance.

It takes a steady hand and absolute focus to work with these documents. Put another way: Wouldn't you be nervous if your job was to scan the U.S. Constitution, the Magna Carta or a signed portrait of Michael Bolton?

I asked Lenny to tell me a little bit more about the job: "Well, I was very excited knowing that I was going to be working on a special historical assignment. It took longer to complete because I had to place one document at a time on the flatbed scanner in order to prevent documents from tearing or being damaged since the paper is quite old."

Auto feed on the Xerox machine? Not at the NSRC. Each page may require removing staples from onion skin paper, recalibrating the scanner to ensure a faithful reproduction of the original record, or developing a strategy to scan an irregularly sized document. It's a laborious task, but just another day at the office for Lenny and Danny.

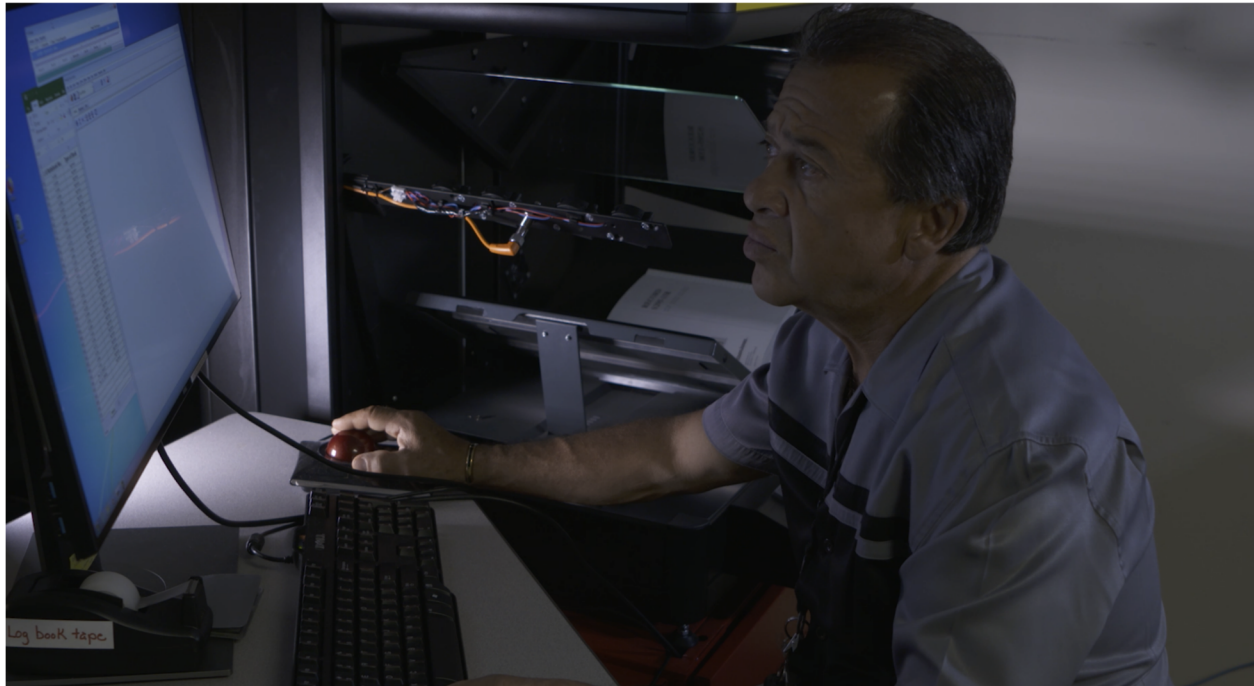
Accessing Critical Information

Now that the scanning is complete, what happens next? The patents are searchable and accessible via our classified digital repository called the Online Vault.

Tom Kunkle, a retired LANL physicist who has worked with the original patents, was excited to hear about the collection's completed digitization as well as what this means for researchers. "The scanned patent collection will permit an expanded technical audience for these early concepts and creations, and allow better appreciation of the paths taken."

As for the original documents, the patents will continue to be maintained in compliance with the highest industry standards in the NSRC.

And what can you expect in the future from LANL's classified library? The NSRC will of course continue digitizing collections critical for today's mission work. NSRC Director Riz Ali said, "For the Lab's technical staff, digitization projects like the Patent Collection allow an even clearer picture of early weapons work. As a partner to weapons scientists and engineers, we'll continue our efforts to provide them with the assistance they need to be successful."



https://drive.google.com/file/d/1VJMPqW38_ceBlwbX2ixtjD0XniV4aRXm/view?usp=sharing

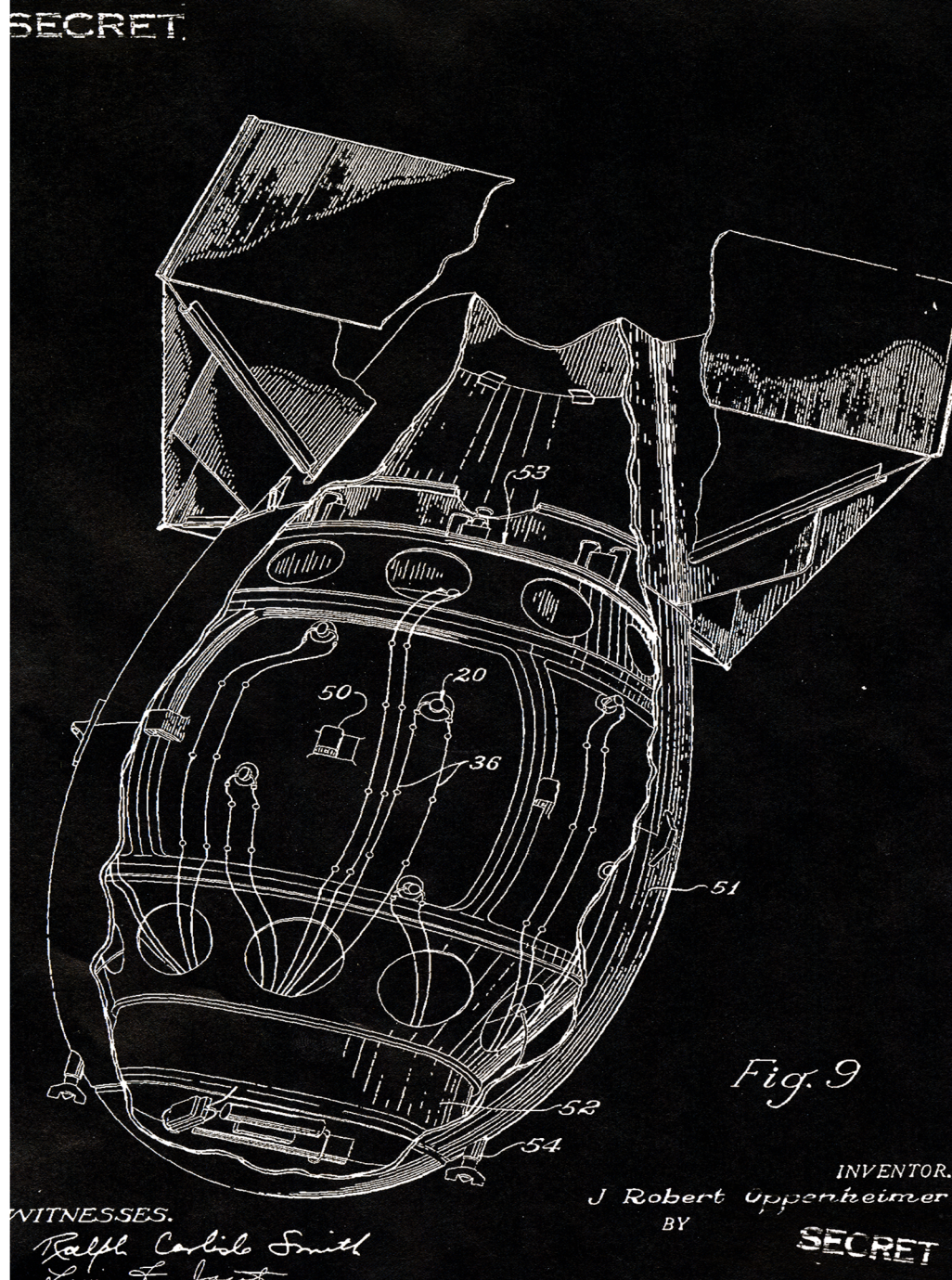
Lenny Martinez, a digitizer in the National Security Research Center (NSRC), recently completed scanning the Lab's Patent Collection. This collection contains more than 5,300 documents, including official forms, handwritten notes and drawings related to the development of the first nuclear weapons. Today's researchers rely on these materials for their national security work.



<https://drive.google.com/file/d/1EcjUYdwWubKxnzR6HCOA54vTMKI8d4Kb/view?usp=sharing>

Danny Alcazar is the lead archivist in the National Security Research Center and works to ensure legacy weapons-related information is preserved and accessible for researchers. Lab scientists regularly access

this information for today's work.



<https://drive.google.com/file/d/1XXbu-MAzAaGi4YTXC7pznpG-L4X7FKpk/view?usp=sharing>

This now-unclassified drawing of the Fat Man implosion weapon is part of its patent application, which lists Lab Director J. Robert Oppenheimer as the inventor. The application is one of 25 from 1944 - 1946 that are part of the Patent Collection in the National Security Research Center, the Lab's classified library. The collection was recently digitized and is now accessible electronically to LANL researchers for today's national security work.

RECEIPT FOR CLASSIFIED MATERIAL

TO: Mr. J.T. Serduke Date 16 May 1944

RE: Receipt of CLASSIFIED Material.

Original to be signed personally by the recipient and returned to the sender.
Duplicate to be retained by the recipient addressed.
Triplicate retained by sender for suspense file.

I have personally received from (sender) Capt. R.C. Smith

P. O. Box 1663, Santa Fe, New Mexico.

the CLASSIFIED material as identified below. I assume full responsibility for the safe handling, storage, and transmittal elsewhere of this material in accordance with existing regulations of the O.S.R.D. governing the handling of CLASSIFIED material. The CLASSIFIED material, including inclosures and attachments, is identified as follows: (In identifying CLASSIFIED material avoid any reference which might cause the receipt form to become CLASSIFIED):

CLASS (Secret, Con- fidential)	DESCRIPTION Nature* (Letter, Report, etc.)	FROM	ADDRESSED TO	DATED
Secret	3 sheets of drawings S-1214	RCS	JTS	16 May 44

*SO: signed original
CC: carbon copy
PG: photostat copy
TG: typed copy

Miriam White (signature)

16 May 44 (date)

(Register Number)

This unclassified document is part of the Lab's classified Patent Collection related to the Little Boy weapon drawings from 1944, when Los Alamos was a top-secret lab racing to create the world's first atomic bombs and help end World War II. These patents, which are part of the collections in the National Security Research Center, record the intellectual foundation of the Lab's Weapons Program and reiterate the Laboratory's history of innovation.